

Amendments to the Claims:

The **Listing of Claims** below replaces all prior versions, and listings, of Claims in the Application.

Listing of Claims:

Claims 1-18 (Cancelled). Claims 1-18 were previously cancelled and the following claims added in a Response filed 02/10/06.

19. (amended) A method of electrolytically plating a layer of metal on the internal surface of a hole within a printed circuit board, said method comprising:

substantially immersing a printed circuit board having a hole therein which extends entirely through the thickness of said printed circuit board within an electroplating bath containing ions of a metal to be deposited onto the internal surface of said hole and further containing brighteners and levelers; and

passing an electric current through said bath wherein said current includes modulated forward and reverse pulses wherein said modulated forward pulses are applied for a duration of from about 40 milliseconds to about 140 milliseconds and said modulated reverse pulses are applied for a duration of from about 2 to about 8 milliseconds, the ratio of the current densities of said modulated forward pulses to said modulated reverse pulses being within the range of from about 1:2.5 to about 1:3.5, selected ones of said modulated reverse pulses followed by a pause in said electric current, , said pause occurring for a time duration of from about 0.1 millisecond to about 1.0 millisecond so as to deposit a substantially uniform layer of said metal on said internal surface of said hole without filling said hole with said metal, the aspect ratio of said thickness of said printed circuit board to the diameter of said hole within the range of from 10:1 to 25:1.

20. (previously submitted) The method of claim 19 wherein the ratio of times of said modulated forward pulse to said modulated reverse pulse to said pause is within the range of from about 40:4:1 to about 400:20:1.
21. (previously submitted) The method of claim 20 wherein each of the pairs of said modulated forward and modulated reverse pulses are provided for an average current density of from about 8 to about 15 amperes per square foot.
22. (amended) The method of claim ~~[[21]]~~ 19 wherein the current density of each of said modulated forward pulses is about 16 amperes per square foot ~~[[ratio of said current densities of said modulated forward pulses to]]~~ and the current density of each of said modulated reverse pulses is ~~[[within the range of from about 1:2.5 to about 1:3.5]]~~ about negative 48 amperes per square foot.
23. (amended) The method of claim 19 wherein said electroplating bath further includes ~~[[organic brighteners,]]~~ carriers ~~[[and/or levelers]]~~.
24. (previously submitted) The method of claim 19 wherein said electroplating bath is an acid bath composition including from about 10 to about 15 grams per liter of copper.
25. (previously submitted) The method of claim 24 wherein said acid bath composition includes from about 230 to about 270 grams per liter of acid.
26. (previously submitted) The method of claim 25 wherein said acid is sulfuric acid.
27. (previously submitted) The method of claim 19 wherein said printed circuit board includes a dielectric material selected from the group consisting of fiberglass-reinforced epoxy resin, polytetrafluoroethylene, polyimide, polyamide, cyanate resin, photoimageable materials and combinations thereof.
28. (previously submitted) The method of claim 19 wherein said metal is a copper.

29. (amended) A method of electrolytically plating a layer of metal on the internal surface of a hole within a printed circuit board, said method comprising:

substantially immersing a printed circuit board having a hole therein which extends entirely through the thickness of said printed circuit board within an electroplating bath containing ions of a metal to be deposited onto the internal surface of said hole and further containing brighteners and levelers; and

passing an electric current through said bath wherein said current includes modulated forward and reverse pulses wherein said modulated forward pulses are applied for a duration of from about 40 milliseconds to about 140 milliseconds and said modulated reverse pulses are applied for a duration of from about 2 to about 8 milliseconds, the ratio of the current densities of said modulated forward pulses to said modulated reverse pulses being within the range of from about 1:2.5 to about 1:3.5, selected ones of said modulated forward pulses followed by a pause in said electric current prior to said modulated reverse pulse, said pause occurring for a time duration of from about 0.1 millisecond to about 1.0 millisecond, so as to deposit a substantially uniform layer of said metal on said internal surface of said hole without filling said hole with said metal, the aspect ratio of said thickness of said printed circuit board to the diameter of said hole within the range of from 10:1 to 25:1.

30. (previously submitted) The method of claim 29 wherein the ratio of times of said modulated forward pulse to said modulated reverse pulse to said pause is within the range of from about 40:4:1 to about 400:20:1.

31. (previously submitted) The method of claim 30 wherein each of the pairs of said modulated forward and modulated reverse pulses are provided for an average current density of from about 8 to about 15 amperes per square foot.

32. (amended) The method of claim [[31]] 29 wherein the current density of each of said modulated forward pulses is about 16 amperes per square foot [[ratio of said current densities of said modulated forward pulses to]] and the current density of each of said modulated reverse pulses is [[within the range of from about 1:2.5 to about 1:3.5]] about negative 48 amperes per square foot.
33. (amended) The method of claim 29 wherein said electroplating bath further includes [[organic brighteners,]] carriers [[and/or levelers]].
34. (previously submitted) The method of claim 29 wherein said electroplating bath is an acid bath composition including from about 10 to about 15 grams per liter of copper.
35. (previously submitted) The method of claim 34 wherein said acid bath composition includes from about 230 to about 270 grams per liter of acid.
36. (previously submitted) The method of claim 35 wherein said acid is sulfuric acid.
37. (previously submitted) The method of claim 29 wherein said printed circuit board includes a dielectric material selected from the group consisting of fiberglass-reinforced epoxy resin, polytetrafluoroethylene, polyimide, polyamide, cyanate resin, photoimageable materials and combinations thereof.
38. (previously submitted) The method of claim 29 wherein said metal is a copper.